1、针距修改： 轻按设置键，针距数字闪烁，按 + 或 - 修改针距，数字越大，针距越大
Needle spacing modification: Lightly press the setting button, the needle spacing number will flash, press+ or - to modify the needle spacing, the larger the number, the larger the needle spacing

2、功能选择： 长按设置键3秒后松开，屏幕会显示P 01等字样，按 + 或 - 选择功能，再次按设置键进入此功能设置模式。
Function selection: Press and hold the setting button for 3 seconds, then release it. The screen will display words such as P 01. Press+ or - to select the function, and press the setting button again to enter this function setting mode.

| 参数项目 NO.	中文说明 Chinese description	范围 range	初始值 initial value	设定键 Setting key	内容值名称说明与备注 Description and Remarks of Content Value Names
P 01	针距 needle pitch	10-300	100	+ -	针距，快速粗调 Needle pitch, quick and coarse adjustment
P 02	运行模式 operational mode	F-1/F-2	F-1	+ -	普通和同步模式切换，Normal and synchronous mode switching，F-1： 普通模式 F-1； Normal mode F-2，同步模式(机针同步) F-2: Synchronous mode (needle synchronization)
P 03	针距限制 Needle spacing limit	200-500	300	+ -	限制P 01 可调的最大针距，默认 300。 Limit the maximum adjustable stitch distance of P 01, which is 300 by default..
P 05	测分辨率 Measuring resolution		FBL	轻踩踏板 Pedal lightly	测编码器分辨率，*只适用于同步模式 Measure the encoder resolution. * only applies to synchronous mode.
P 06	停针原点 Stop needle origin	yd-1/yd-2	yd-1	轻踩踏板 Pedal lightly	设置同步模式停针原点，*只适用于同步模式 Set the stop origin of synchronous mode, * only applies to synchronous mode.
P 07	同步偏移 Synchronous offset	-99-99	0	+ -	同步启停位置偏移脉冲数量，同步模式下，The synchronous start-stop position is offset by the number of pulses. In synchronous mode, 电机启动早了，则调整为负数。If the motor starts early, it will be adjusted to a negative number. 电机启动晚了，则调整为正数。If the motor starts late, it will be adjusted to a positive number.
P 08	同步比例 Synchronous proportion	30-80	55	+ -	调整同步轨迹百分比例，小范围内可以调整按牙齿同步还是落针同步。*只适用于同步模式 Adjust the percentage of synchronization trajectory. For example, in a small range, you can adjust whether to synchronize by teeth or drop the needle. * Only applies to synchronization mode.
P 12	压脚延时 Foot pressing delay	OFF / 5-200	OFF	+ -	剪线后压脚延时放下。默认 OFF，延时范围 5-200 针。*需要接入剪线和上停针信号。After thread cutting, the presser foot is put down in time delay, which is OFF by default, and the delay range is 5-200 stitches. * Need to connect thread cutting and needle stop signals.
P 13	倒缝抬压脚 Lift presser foot by reverse sewing.	OFF / ON	OFF	+ -	倒缝时抬压脚，默认 OFF 不抬，ON 为抬脚。Lift the presser foot when sewing backwards. By default, OFF does not lift, and ON means lift.
P 14	抬压脚间隔 Foot-lifting interval	OFF / 0.2-5	OFF	+ -	两次抬压脚之间的间隔，默认 OFF 关闭。The interval between two presser foot lifts is OFF by default.
P 15	电机正反转 Positive and negative rotation of motor	OFF / ON	OFF	+ -	电机转动方向，默认 OFF 正转，ON 为反转。Motor rotati direction, default OFF forward rotation, ON reverse rotation.
P 17	针距微调 Fine adjustment of needle distance	0.00-0.99	0.00	+ -	在 P 01 的针距中加入 99 格微调 Add 99 fine adjustments to the needle pitch of P 01.
P 18	倒缝针距 Reverse stitch distance 同比倍率 Year-on-year ratio	OFF/0.1-4.0	OFF	+ -	倒缝时针距倍率，OFF 为关闭，可调范围 0.1-4.0。1.0 时倒缝针距和正缝一致，2.0 时倒缝针距为正缝时的 2 倍。The ratio of stitch length in reverse sewing is OFF, and the adjustable range is 0.1-4.0. At 1.0, the stitch length in reverse sewing is the same as that in forward sewing, and at 2.0, the stitch length in reverse sewing is twice that in forward sewing.
P 20	初始化 initialization	OFF / ON	OFF	+ -	按+键调整 ON，按设置键即可初始化参数。Press the key to adjust ON, and press the set key to initialize the parameters.
P 21	抬压脚时电机使能 Lifting the presser foot Motor enable	OFF / ON	OFF	+ -	OFF，上抬压脚时，步进电视释放电流。ON，不释放电流。出厂默认 OFF OFF, when the presser foot is lifted up, the stepping TV releases current. ON, no current is released. Factory default off.
P 24	抬放压脚信号过滤 Lift the presser foot Signal filtering	OFF/0.1-2.0	OFF	+ -	默认为 OFF，单位为秒，如改为 0.5，即压脚提升后 0.5 秒内不检测落下。The default value is OFF, and the unit is seconds. If it is changed to 0.5, the fall will not be detected within 0.5 seconds after the presser foot is lifted.
P 26	硬件测试 hardware test	OFF / 1-5	OFF	+ -	默认 OFF 关闭；OFF by default; 1 拖轮正转，1-The puller is turning forward，2 拖轮反转，2-Puller reverses，3 拖轮正反转，3-The puller rotates forward and backward 4 抬压脚 4-Lift the presser foot 5 拖轮正反转加抬压脚(老化测试)5-Puller forward and backward plus lifting presser foot (aging test)
P 27	倒缝触发电平选择 Reverse seam trigger Level selection	0/1	0	+ -	电磁铁倒缝默认都为 0，只有极少别电机倒缝的机型需要改为 1，例如富山 H9500A。一般无需更改，特殊需要更改的机型会有安装说明文档。By default, the back seam of electromagnet is 0, and only a few motor models need to be changed to 1, such as Hikari H9500A. Generally, there is no need to change, and the models that need to be changed specially will have installation instructions.
P 28	电机输出速度倍率 Motor output Speed ratio	OFF/0.1-4.0	OFF	+ -	电机输出速度倍率，OFF 为关闭，可调范围 0.1-4.0。Output speed ratio of the motor, OFF is off, and the adjustable range is 0.1-4.0.
P 29	编码器模式选择 encoder Mode selection	OFF / 1-2	OFF	+ -	可以切换编码器模式，重新开机后生效。You can switch the encoder mode and it will take effect after restarting 此参数 P20,P30 初始化后不重置，需手工更改 These parameters P20 and P30 are not reset after initialization and need to be changed manually. OFF - 正常模式 (开机 J 50) OFF-normal mode (startup J 50) 1- 低频编码器模式 (开机 J 50) 1-low frequency encoder mode (startup J 50) 2- 包缝机模式(霍尔信号) (开机 J 50) 2-Sewing machine mode (Hall signal)
P 30	初始化 initialization	OFF / ON	OFF	+ -	等同于 P20 Equivalent to P20
P 31	压脚高度 Height of presser foot	1-15	12	+ -	默认为 12，180 度为角最低 The default is 12,180 degrees diagonal lowest point 偏心轴旋转角度从 70 度-210 度可调。The rotation angle of the eccentric shaft can be adjusted from 70 degrees to 210 degrees.
P 32	语音播报	0-2	1	+ -	0-关闭 OFF ；1-中文 CH；2-英文 EN

如果出现抬放压脚位置个准确，或跑一圈才停，可能是某个上下限位霍尔传感器失灵了。
If the position of lifting presser foot is inaccurate, or it stops after running for one lap, it may be that one of the upper and lower limit Hall sensors is out of order.

P23设置成ON，然后通过减号键抬放压脚，可以测试上下霍尔是否失效， 上霍尔有效，针距前会提示 ⎺ ，下霍尔有效则提示 __ 。
P23 is set to ON, and then the presser foot is lifted by the minus key to test whether the upper and lower Hall are invalid. When the upper hall is valid, it will prompt ⎺ before the needle distance, and when the lower hall is valid, it will prompt __ .

万能电子拖轮
Universal Digital Puller

DM万能电子拖轮安装使用说明书
DM Universal Digital Puller Installation and Operation Manual
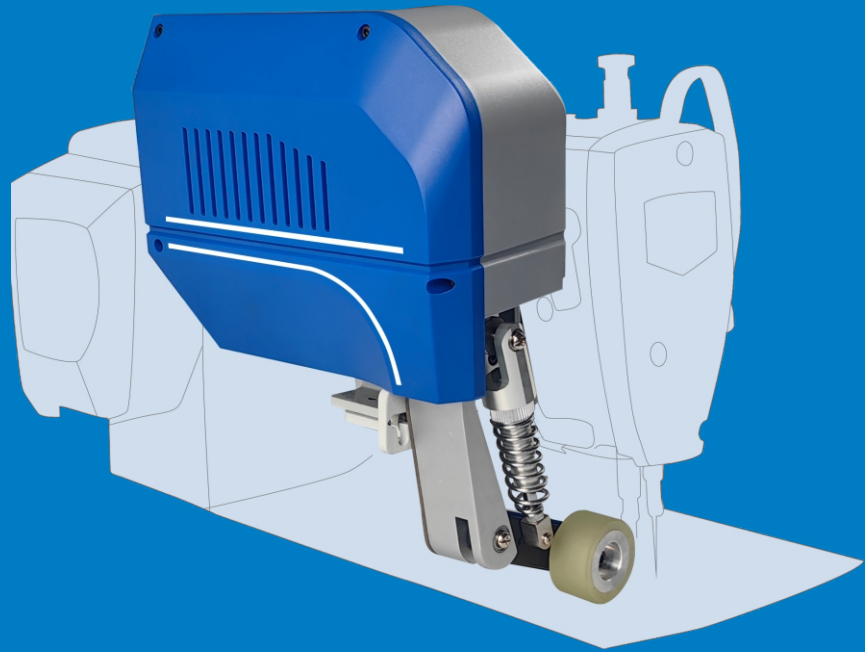
适用于Compatible with:

平缝机、同步机、埋夹机、包缝机、绷缝机、双针车
Sewing machine as lockstitch， Synchronous， Buried folder， Overlock， Interlock and double-needles

运用各种面料, 皮革缝制牵引（10000+）
Using a variety of fabrics, leather sewation traction

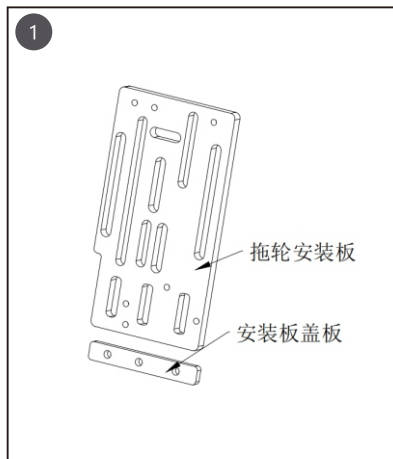面料起皱 Fabric wrinkle

面料打滑 Fabric slip

过砍不顺 Not fluent

送料不畅 Not smooth
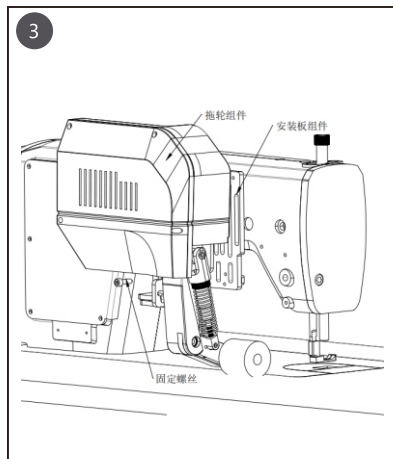
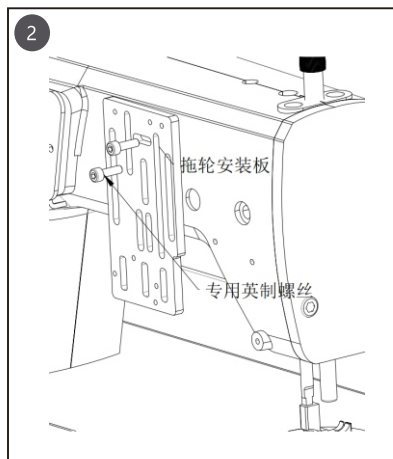# 电子拖轮装置/Digital Puller Device

1 Installation order
安装顺序

1、找出配件包里面的拖轮安装支架、安装板盖板、配件包等。

Install the puller mounting bracket, mounting plate cover, accessory package, etc. from the accessory package.

拖轮安装板

专用英制螺丝

2、用配件包里面的缝纫机专用英制螺丝拖轮安装板固定在缝纫机上(螺丝锁紧前要先将拖轮摆上去，确保安装板的位置够拖轮左右上下调节)

Fix the puller mounting plate onto the sewing machine using the English screws specifically designed for sewing machines in the accessory kit (before locking the screws, place the tugboat up first to ensure that the mounting plate is positioned enough for the tugboat to adjust left, right, up, and down)
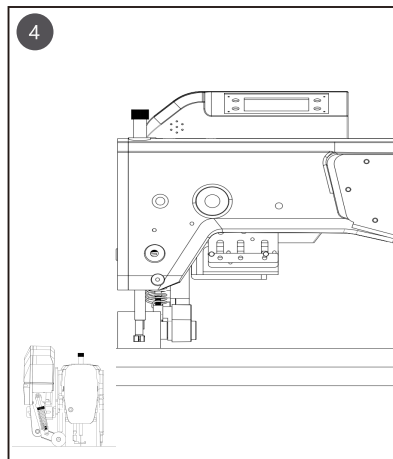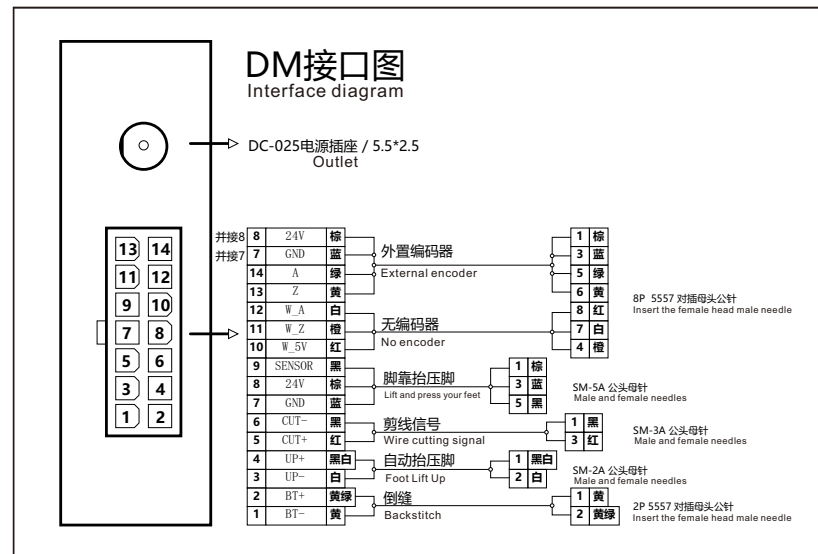

拖轮组件
安装板组件
固定螺丝

3、用M5*16内六角圆柱头螺丝将拖轮组件微锁紧在安装板组件上，调整拖轮组件位置(轮子左右居中于缝纫机压脚，上下位置轮子最下端接触台面，弹簧压缩1mm左右)。

Use M5 * 16 hexagonal socket head screws to slightly lock the puller assembly onto the mounting plate assembly, and adjust the position of the puller assembly (the wheels are centered on the sewing machine presser foot on both sides, with the bottom of the wheel touching the table in the up and down positions, and the spring compressed by about 1mm).

4、锁紧螺丝，如遇到角度不对，可以调整支架角度。

Tighten the screws, and if the angle is incorrect, adjust the bracket angle.

2 Wire-connect
接线原理

DM接口图
Interface diagram

DC-025电源插座 / 5.5*2.5
Outlet

		并接8	8	24V	棕		
		并接7	7	GND	蓝	外置编码器
			14	A	绿	External encoder
			13	Z	黄
			12	W_A	白	无编码器
			11	W_Z	橙	No encoder
			10	W_5V	红

8P 5557 对插母头公针
Insert the female head male needle

脚靠抬压脚
Lift and press your feet
SM-5A 公头母针
Male and female needles

剪线信号
Wire cutting signal
SM-3A 公头母针
Male and female needles

自动抬压脚
Foot Lift Up
SM-2A 公头母针
Male and female needles

倒缝
Backstitch
2P 5557 对插母头公针
Insert the female head male needle

9	SENSOR	黑
8	24V	棕
7	GND	蓝
6	CUT−	黑
5	CUT+	红
4	UP+	黑红
3	UP−	白
2	BT+	黄绿
1	BT−	黄

! Caution
使用注意事项

1、拖轮电控箱与拖轮主件安装时需轻拿轻放；
2、本机必须接交流110或220v电源；
3、拖轮主件安装固定好，需保证滚轮与台面的左右平整；
4、同步器与缝纫机连接尽可能同心，以减少晃动；

1、The control box and the main parts should be carried lightly while installing the main parts;
2、The main parts should b e fixed well, and the left and right leveling of the roller and the countertop should be ensured;
3、The main parts should befixed well, and the left and right leveling of the roller and the countertop should be ensured;
4、encoder and sewing machine connection as concentric as possible to reduce sloshing;

同步模式设置 (同步编码器或部分无编码器转接线才有同步功能)
Synchronization mode setting (only synchronous encoders or partially encoder free adapter cables have synchronization function)

1、运行模式：设置P 02，调整到 F−21.
Operation mode: Set P 02 and adjust to F-2.

2、测分辨率：设置P 05，出现FBL，轻踩踏板，直到FBL字样变为针距。
Resolution measurement: Set P 05, FBL appears, lightly press the pedal until the FBL text changes to needle pitch.

3、停针原点：设置P 06，出现yd−1，按抬压脚，让针自动定位到上停针，也可以手轮拨动至上停针位置，按设置键，出现yd−2，然后轻踩踏板(或者匀速转动手轮)，直到yd−2字样变为针距。
Stop needle origin: Set P 06, yd-1 appears, press the lifting foot to automatically position the needle to the upper stop needle position, or turn the handwheel to the upper stop needle position, press the setting button, yd-2 appears, then lightly press the pedal (or rotate the handwheel at a constant speed) until the yd-2 symbol changes to needle spacing.

4、效果测试：拿模版夹白纸实际测试效果，同步效果满意，则结束，不满意可以微调同步偏移量。
Effect testing: Use a template to clip white paper and test the actual effect. If the synchronization effect is satisfactory, it ends. If not satisfied, you can adjust the synchronization offset.

5、同步偏移：设置 P 07，按可以调整偏移脉冲，同步模式下，电机启动早了，则调整为负数。电机启动晚了，则调整为正数。
Synchronous offset: Set P 07 and press to adjust the offset pulse. In synchronous mode, if the motor starts early, adjust it to a negative value. If the motor starts late, adjust it to a positive number.